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The Utility of Functional Movement Assessment and Select Clinical Measures in Predicting Injury in NBA Players

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Introduction

Professional basketball has evolved into a contact sport that imparts an incredible physical demand on an athlete's body. Despite medical advancements and the progression of coaching and training techniques, rate of injury has not declined. Tools such as the Functional Movement Screen (FMS) and Y-Balance Test (YBT) have been used to assist in predicting injury, but recent literature has stated that they are better for identifying functional deficits than potential for injury. Certain clinical tests and measures may be helpful in determining which players may be at risk.

Purpose

The purpose of this study was to evaluate the utility of the FMS, YBT and select clinical measures in the prediction of injury in National Basketball Association players.

Subjects

Sixty-eight National Basketball Association players

Methods

Data was collected from the FMS, YBT, and selected clinical measures from two professional basketball teams prior to the 2012-13, 2013-2014, 2014-15. This data was retrospectively pooled, analyzed, and correlated with injury using SPSS.

Results

ROC curves were run for both FMS and YBT composite scores. A sensitivity of 0.90 was set and resulted in cut off points of 18 or greater on FMS and less than .634 on YBT to demonstrate lower risk of injury. Six players scored above 18 for FMS and 8 scored below the cut off for YBT. A scoring asymmetry on the FMS lunge step had a significant correlation to dichotomous injury ($r = .77$). A negative correlation was found between Y-balance left and right composite and arch height index ($r = -.62$ and $-.64$, respectively).

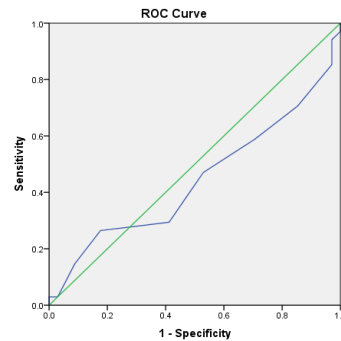
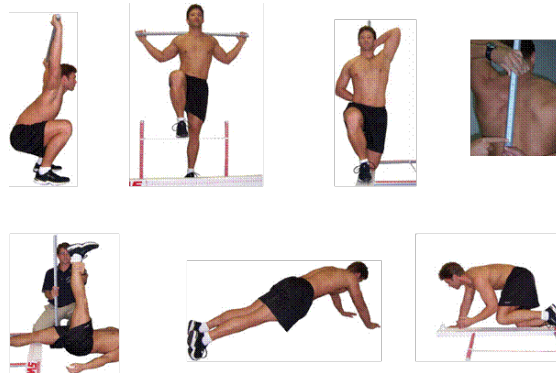


Fig. 1: ROC curve relationship between FMS composite scores and injury

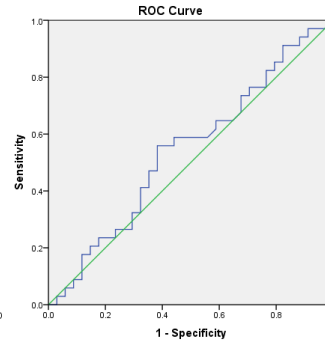
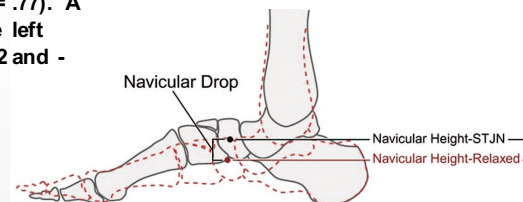


Fig. 2: ROC curve relationship between Y-Balance absolute composite score and injury



	L Leg Length	R Leg Length	R Navicular Drop
L Composite	-.522	-.535	-.621
R Composite	-.531	-.546	-.638

Fig. 3: Pearson Correlation representing moderate correlation between L and R composite YBT score and navicular drop

Conclusion

It remains unclear if the FMS and YBT are effective for injury prediction in elite basketball athletes. Our findings support recent literature that refutes the 14-point cut off score as a valid predictor of injury. The results suggest that there may be a relationship between arch stability and balance. Assessment of asymmetries in bilateral FMS testing, particularly the lunge step, may be more effective for injury prediction. Factors that may confound the utility of these measures include: pre-season intervention, pre-test preparation, and player reluctance to share pain ratings during testing.

Clinical Relevance

The FMS and YBT have not been found to be predictive of injury in professional basketball players. While these functional tests are intended to be utilized as screening tools for identifying athletes that may be at risk for injury; other factors such as the identification and integration of select clinical measures may be needed.

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